ADOPTION OF PROBLEM BASED LEARNING (PBL): AN EMPIRICAL STUDY ON THE LECTUERS OF UNIVERSITI SAINS MALAYSIA (USM)

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By

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DEDICATION

To my beloved parents:

Professor. Dr. Arunodaya Barman

&

Mrs. Sujata Barman

And my only brother:

Konakodaya Barman (Anindaya)

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First and foremost, my gratitude to almighty God, who gave us life and direct us the appropriate way to overcome all difficulties to achieve our desire success.

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ABSTRAK

Tujuan kajian ialah untuk mengenal pasti penentu-penentu yang mempengaruhi pensyarah USM untuk mengguna kaedah pembelajaran berdasarkan masalah. Model ‘ Theory of Reasoned Action’ (TRA) Ajzen dan Fishbein (1980) telah diguna dalam keseluruhan kajian ini. Dalam kajian tinjauan, terdapat dua pemboleh ubah luaran: pengetahuan dan kemahiran; tiga pemboleh ubah tak bersandar; sikap, norm subjektif dan kawalan kepercayaan tertanggap. Pemboleh ubah bersandar ialah penerimaan PBL oleh pensyarah. Mengikut teori, penentu penerimaan awal ialah sikap, norm subjektif dan kawalan kepercayaan tertanggap. Kombinasi ketiga-tiga pemboleh ubah tak bersandar mempengaruhi penerimaan PBL oleh para pensyarah. Sikap, norm subjektif dan kawalan kepercayaan tertanggap pensyarah terhadap PBL ditentukan oleh pengetahuan dan kemahiran mereka terhadap PBL. Saiz sample ialah 112 pensyarah USM yang dipilih menerusi pensampelan mudah tanpa-kebarangkalian. Korelasi Pearson telah diguna untuk mengkaji hubungan antara pemboleh ubal tersebut. Analisis regresi berganda telah diguna untuk menentukan pengarah kedua-dua penentu luaran terhadap ketiga-tiga pemboleh ubah tak bersandar dalam kajian ini dan analisis diskriminan telah diguna untuk menguji hubungan antara tiga pemboleh ubah tak bersandar dan pemboleh ubah bersandar yang tunggal iaitu penerimaan. Penemuaan kajian ini menunjukkan bahawa pengetahuan pensyarah tentang PBL mempengaruhi sikap dan kawalan kepercayaan tertanggap secara positif dan signifikan tetapi tiada hubungqan positif dan signifikan antara pengetahuan pensyarah dan norm subjektif mereka. Di sebaliknya, kemahiran pensyarah terhadap PBL mempunyai hubungan yang positif dan signifikan hanya pada norm subjektif mereka tetepi tidak pada sikap dan kawalan kepercayaan tertanggap mereka. Ketiga-tiga pemboleh ubah tak bersandar iaitu sikap, norm subjektif dan kawalan kepercayaan tertanggap tentang PBL didapati telah mempengaruhi penerimaan PBL secara positif dan signifikan. Implikasi dan garis panduan untuk penyelidikan masa hadapan yang menggunakan model TRA telah dibincang dalam kajian ini.

ABSTRACT

The purpose of the study is to identify the determinants of lecturers' intention to adopt Problem Based Learning (PBL) in Universiti Sains Malaysia. Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) was used as a model of the entire study. In this survey study, there are two external variables: knowledge and skill; three independent variables: attitude, subjective norm and perceived belief control. The dependent variable is lecturer's adoption on PBL. According to the theory, the immediate determinants of adoption are attitude, subjective norm and perceived belief control. Combinations of these three independent variables affect the PBL adoption of lecturers. Lecturers' attitude, subjective norm and perceived belief control toward PBL is determined by their knowledge and skill on PBL. The sample size is 112 lecturers of USM, chosen by non-probability convenience sampling. The Pearson's correlation used to see the relations between variables. Multiple Regression analysis used to find how these two external variables affect these three independent variables of this study and the discriminant analysis was used to test the relationship between three independent variables and only dependent variable, adoption. The findings of the study indicate that, the lecturers' knowledge on PBL affect their attitude and perceived belief control positively and significantly but there is no positive and significant relationship between lecturers' knowledge and their subjective norm. On the other hand, lecturers' skill on PBL has a positive and significant relation only in their subjective norm but not in their attitude and perceived belief control. The three independent variables of this study lecturers' attitude, subjective norm and perceived belief control about PBL affect their adoption of PBL positively and significantly. The implications and the guidelines for future research using this TRA model are discussed in this study.

Chapter-1

Introduction

1.1: Background of the study

PBL is “Problem” ”Based” ”Learning”**.** A “problem” is something that is problematic to the individual; something that cannot be resolved with the current level of knowledge and/or way of thinking about the issues. PBL is a curriculum development and delivery system that recognizes the need to develop problem solving skills as well as the necessity of helping individual to acquire necessary knowledge and skills. (Stephen & Pyke, 1977).

The nature of effective problems in problem-based learning is that they are ill-structured as opposed to well structure. The characteristics of PBL ill-structured problems are that they are real-life and authentic not lecturer’s exercises, messy not tidy, incomplete in the sense of lacking information needed for their resolution and iterative in the way that they produce further ideas/hypotheses and learning issues (Barrows 1989; Stephen and Pyke, 1977; Margeston, 2001).

PBL since its implementation in McMaster University in Canada in the mid 1960s it adopted in many schools in other parts of the world. There are variations of PBL implemented at institutions like University New Maxico, Harvard University, the University of Sherbrooke, and Michigan State University (Albanese & Mitchell, 1993).

PBL was first introduced to the Temasek Engineering School in 1998, with several subjects piloted and taught partially in this learning mode. In 1999, PBL was adopted for the entire curriculum of the Diplomas in Computing and Engineering and was further adopted in a smattering of subjects in the other Diploma courses. (Yeo, 2005).

PBL is an important method for a lecturer to evaluate the students learning. It challenges students to “learn to learn” working courteously in groups to seek out the solutions to the real world tribulations (Barman, Rogayah & Fuad, 2007).

There is no single common arrangement concerning the theoretical basis for, or practice of, Problem Based Learning. There is not even conformity about whether there is or should be one category of Problem Based Learning or numerous variants (Engel, 1991; Savin-Baden, 2000b). The extensive distribution of Problem Based Learning has, de facto, spawned several variations (Barrows, 2000). An significant dissimilarity at the heart of Problem Based Learning is that with problem solving learning. Bereiter and Scardamalia (2000) differentiate involving PBL (uppercase) and PBL (lowercase). Lowercase PBL refers to an imprecise assortment of educational approaches that provide problems a central place in the learning activity. Whereas practitioners of 'PBL' (uppercase) be apt to stick to the structures and procedures first systematized by Howard Barrows (1986). Innermost to this structure is a commencement of learning as an incorporated procedure of cognitive, metacognitive and individual improvement. Howard Barrows argues that a more precise title for the model he and his collaborators urbanized might be ‘student-centred, problem based, inquiry-based, integrated, collaborative, reiterative learning’

(Barrows, 2000). However, the label Problem Based Learning has immovable. And it is this uppercase 'PBL' that is the focus of this Curriculum Guide.

Students generally enjoy the active participation that the PBL provides. Problem-based learning reduces the traditional barriers between lecturers and students (David et al, 1999). In spite of its growth and advantages, there is continuing debate about its effectiveness over the conventional teaching learning methods (Berkson, 1993).

In this century, Problem Based Learning (PBL) is very famous and most usable learning and assessment method in many educational institutions. Now a days, many of educational institutes are using PBL method to evaluate the student's learning, understanding on each specific courses.

Universiti Sains Malaysia (USM) is practicing the PBL method for its different schools. Problem Based Learning (PBL) is the learning and assessment method of the under graduate and post graduate students of the educational institution. By this method, in most courses, the institutes are evaluating students learning capabilities by all most 50%. This PBL method is mainly containing the group work and sometimes individual works as well. It is to do the case study and project papers given by the lecturer. Therefore, the team work is increasing, students interpersonal skills are increasing, students are getting chance to share their knowledge with each other. In that case, the understanding of the topic and the knowledge regarding the course are increasing.

PBL method also consists of oral presentations, which increases the students' confidence on the public speaking. Students are learning how to solve and present any problem solution in front of audience. They also becoming capable of answering the audiences' questions and make them perfectly understood about the problem's solution.

Whatever the subject-based studies students undergo during their schooling, at the end of the day they are to work in different workplaces. Their work is not something written in text book rather these are some issues they needs to solve. These issues are termed as problems, such as workers in the industry can not improve the quality and quantity of the products, in the schools teachers find students are not achieving their learning outcomes as expected etc. Here the industry manager needs to solve the problem related to the workers and products, teachers need to solve the problems related to the teaching and learning methods and the students learning outcomes. Hence, the industry manager should be developed in such a way so that they find it comfortable to tackle those problems. PBL is a method of teaching and learning that help the future manager, teachers, doctors and others to learn how to solve problems in future. PBL sessions are based on a problem which is simulation of real life situation. Learning and practicing this method in students life will help them tackling problem in future work life.

Even though, PBL is giving long term benefits but it's not fully ensure that, PBL is always successfully implemented. Some might even argue that PBL is the teaching of old "dogs" new tricks – where "learners" are constantly challenged to unlearn old learning habits to make way for new learning styles. In many cases, both lecturers and

learners struggle to maintain equilibrium in managing PBL: on the one hand to maintain integrity in the PBL process, and on the other teaching students sufficient "tricks" to help them juggle along (Dixon, 2000).

The shift in emphasis from traditional teaching to an emerging method like PBL is largely triggered by the changing external environment that is the "global" workplace, for which institutions are preparing their students. In recent years, PBL has taken a greater prominence in tertiary education with curriculum directed at independent and team learning (Creedy and Hand, 1995). However, it is not that easy to adopt a new method. It is more likely to be successfully implemented if it is seen as a part of broader strategy of institutional renewal and innovation. Adoption of new method of teaching and learning should reflect the need of future workforce. Problem-based learning (PBL) employs approaches to teaching and learning in education that develop meaningful links between theory and practice. The adoption of such approaches, however, may require changes in pedagogical beliefs and practices which reflect a student-centered approach to teaching and learning (Debra & Brian, 1995).

1.2: Research problem/ Problem statement

Recently, in most of the university, the lecturers' are advised to use the Problem Based Learning (PBL) method. This PBL method may be new to some university lecturers'. Consequently, when it is vital sometimes to agree to the new-fangled method and learn its all new techniques, it possibly will not be welcomed by the teachers. The study mainly focuses on the lecturer's adoption of the PBL method with the purpose of comprehends how the lecturers' adopt the PBL method.

This is imperative to know whether the lecturers are interested in adopting the PBL method or not and if they do adopt, then what are the factors influencing them to adopt the PBL method. This study will in addition examine to what extent the independent variables and external variables concerning to PBL are influencing the lecturers' adoption of PBL. For example, to what extent the lecturers' adoption toward PBL is predictable due to their attitude, subjective norm and perceived beliefs control. Alternatively, this study will also scrutinize to what extent lecturers' knowledge and skills about PBL can ultimately influence their attitude, subjective norm and perceived beliefs control.

1.3: Research objectives

The ultimate goal of this study is to determine why lecturers' choose Problem Based Learning (PBL) method instead of conventional method. If the study able to identify the reasons, it is hoped that effective techniques can be established in making the PBL method more acceptable to the lecturers than the conventional method. Therefore, the techniques that can attract lecturers in choosing PBL method can be implemented.

To reach this goal, the following objectives of the study had been identified:

1.3.1: To examine the relationship between knowledge and skill with attitude, subjective norm and perceived belief control.

1.3.2: To examine to predict the level of influence of attitude, subjective norm and perceived belief control on intension to adopt PBL.

1.4: Research questions

To understand the problem statement, the research questions concern, the lecturers' adoption of Problem Based Learning (PBL). The fact that, the lecturers' adoption in PBL lacks thorough going research is one of the reasons as to why this study is conducted.

The research questions should be addressed are as follows:

1.4.1: How is the relationship between knowledge and skill with the subjective attitude, subjective norm and perceived belief control?

1.4.2: How attitude, subjective norm and perceived belief control can predict intension to adopt PBL?

Theory of Reasoned Action (Fishbein, 1980) will be used to determine the relationships between external, independent and dependent variables. The theoretical framework of this study is developed based on the Theory of Reasoned Action (TRA).

Thus, TRA procedures will be utilized in this study in predicting and explaining lecturers' adoption on PBL.

1.5: Significant of the study

Research on Problem Based Learning has not previously focused much on attitude research for example on lecturers' attitude, subjective norm and perceived belief control towards the PBL. Thus, this recent study takes an attempt to develop the Theory of Reasoned Action (Fishbein, 1980) model. The external variables such as knowledge and skill in this study those are expected to influence the lecturers' attitude, subjective norms and perceived belief control toward the adoption of PBL. In terms of knowledge and skills, the lecturers', who are more knowledgeable and

skilled on PBL method, will utilize the method more interestingly and more appropriately. Therefore, it is expected that the lecturers who are more knowledgeable and with more skills on PBL, their attitudes, subjective norms and perceived beliefs control will be more positive and significant toward the PBL adoption. Thus, it can be concluded that in order to PBL capture a broader area in education, lecturers must be well aware of PBL as well as PBL techniques.

1.5.1: Who will get benefit by this study?

The study will give us a view about the Problem Based Learning (PBL) presently conducted by the USM lecturers. The main importance of the study is to know the lecturers' overall thought regarding the PBL which will help the USM to change or retain the present form of the PBL.

By doing this study, the lecturers will get benefits because; the lecturers are using the PBL method as students' assessment to evaluate their learning.

1.5.2.: Benefits on lecturers:

The purpose of Problem Based Learning (PBL) for a lecturer is to help their students' learning and evaluate their students' knowledge regarding the particular course. Then, they will be able to decide whether to continue with the existing PBL method or to come up with some changes or any extension on their recent PBL method. If there are any weaknesses on their recent PBL method, then the lecturers will be successfully able to find out the solutions in to deal with existing PBL crisis.

1.6 Definitions of major variables of study

1.6.1: External variables

The following two components of the Problem Based Learning (PBL) methods are the external variables of this study.

- ***Knowledge:*** Is defined as the lecturers' level of knowledge about the PBL method.
- ***Skills:*** Skills means the technical knowledge that individual should have to accomplish a particular job.

1.6.2: Independent variables:

There are three independent variables in this study.

- ***Attitude:*** An individual's positive or negative evaluation of self-performance of the particular behavior. The concept is the degree to which performance of the behavior is positively or negatively valued. It is determined by the total set of accessible behavioral beliefs linking the behavior to various outcomes and other attributes.
- ***Subjective norm:*** An individual's perception of social normative pressures, or relevant others' beliefs that he or she should or should not perform such behavior.
- ***Perceived behavioral control:*** An individual's perception of his or her ability to perform a particular behavior.

According to the Theory of Reasoned Action, if people evaluated the suggested behavior as positive (attitude), and if they think their significant others wanted them to perform the behavior (subjective norm), this results in a higher intention (perceived belief control) and they are more likely to do so.

1.6.3: Dependent variable:

- **Adoption:** The act of accepting with approval; favorable reception; "its adoption by society"; "the proposal found wide acceptance".

1.7: Organization of remaining thesis

This thesis divided into five chapters. Following this chapter, in chapter two will be the review of the literature associated to Problem Based Learning (PBL), the Theory of Reasoned Action (Fishbein, 1980), which used as the framework of this study and the nine research hypotheses. In chapter three, the methodology of the thesis will be mentioned with research design, three types of variables and their measure, research population and sample, data collection methods, questionnaire design and also the statistical tools used in analyzing the data will be discussed in data analysis section. In chapter four, the result will be discussed by profile of respondents, goodness of measures, descriptive analysis hypotheses testing and summary of result will be discussed. Finally, in chapter five, there will be a discussion and conclusion of the research with find out of the recapitulations, discussion, implications, limitations, suggestions of the future research and conclusion.

Chapter-2

Literature review

2.1: Background

The aim of the education is to train the students to contend with future problems, set them up to become independent, to be self-directed, life-long learners. Problem Based Learning (PBL) is the appropriate teaching learning method that gives students such opportunities (Barman, Rogayah & Fuad, 2007).

Teachers specially the juniors who have less than two years of experience and the seniors who have 6-10 years of experience have positive attitude towards PBL. Teachers of 2 to 5 years of working experience are very much concerned of their future career and are not willing to give enough effort which is required for PBL. Most teachers like to facilitate PBL sessions. (Gijselaers, Tempelaar, Keizer, Blommaert, Bernard & Kasper, 1995).

With regard to the quality of graduates the teachers produce, some think they are better than the graduates produced by traditional curriculum while others think that they are worse. There is a group of teachers who think it is all the same that is there is no difference in quality of graduates. Teachers who were students of PBL curriculum think that this is a good method of teaching learning. (Gijselaers et.al, 1995).

2.2: History of Problem Based Learning (PBL):

Problem based learning (PBL) first started in medical education at Canada's McMaster University in mid 1960's. They adopted PBL in their faculty of medical school. Afterwards, the PBL was adopted by another three universities: University of Limburg at Maastricht in the Netherlands, the University of Newcastle in Australia, and the University of New Mexico in the United States. These three universities adopted the PBL model in their medical schools to urbanize their own spheres of influence in addition to the "mecca" at McMaster. Afterward, at Michigan State University, a variation of problem-based learning called "focal problems" antedated some of these efforts, but did not extend cohorts as did the McMaster model. From these four institutions sprang one of the more important educational movements of this century (Camp, 1996).

Thirty years ago, from the origin at McMaster, where the model for student-centered, problem based, small group learning took shape, adoption of PBL at other medical schools experienced a slowly through the 1970's and 1980's (Camp, 1996).

In the last twenty years, PBL broadened in the entry-level education in occupational therapy, physical therapy, orthotics and prosthetics and in addition to other health professions has shifted from the execution of intrusion, diagnostic process, mastery of technical skill to grounding of professionals engrossed in evaluation and assessment of outcomes. (Long & Grandis, 2000). Greater prominence has been placed on emergent students' decision-making and clinical reasoning skills, ability to incorporate latest acquaintance and varying perspectives into clinical practice and ability to admittance the emergent clinical research literature. The faculty, who

adopted PBL approach, they admit that PBL is a more effectual apparatus to assimilate theory into clinical practice (Norman & Schmidt, 1992). The majority faculty implicated PBL courses and curricula expect that, as an outcome of the PBL process, students will have greater retention of learning, increased ability to apply knowledge in clinical settings (Barrows & Feltovich, 1987). PBL approach helps the students to enhance their clinical reasoning skills (Camp,1996). The PBL learning procedure is analogous and eagerly extrapolates to practice of ultimate learning (DeWitt, 2001; Sararinen-Rahiika & Binkley, 1998; Solomon, Binkley & Stratford, 1996).

2.3: What is Problem Based Learning (PBL):

Problem Based Learning (PBL) is a student-centered, collaborative, nontraditional approach to education, which was first adopted by McMaster's University in 1965 (Neufeld, Woodward & MacLeod, 1989). In health education, PBL has been adopted by many access and post professional educational in medicine (Woodward & Ferrier, 1983; Moore, Block, Briggs, Mitchell, 1994; Peters, Greenberger, Crowder, Block & Moore, 2000; Smiths, Verbeek & Buisonje, 2002), in nursing (Long, Grandis & Glasper, 1991; Baker, 2000; Forbes, Duke & Prosser, 2001; Matthews-Smith, Oberski, Gray, Carter & Smith, 2001), in physical therapy (Sararinen-Rahiika & Binkley, 1991; Lusardi, Emery & Lake, 1997), in occupational therapy (Royeen, 1995; Stern & D'Amico, 2001), and in pharmacy (Brandt, 2000), among others.

The PBL approach contends that learning occurs most proficiently when it taps and uses a student's prior knowledge is best prolonged and elaborated through vigorous discussion and debate and that integration and maintenance of knowledge occurs

preeminent when learning occurs in a parallel circumstance to the one in which students will eventually use that knowledge (Schmidt, 1983; Sararinen-Rahiika & Binkley, 1998).

PBL approach assumes that through the learning process, the duties and potential for dynamic learning eventually lies with the student and the instructor assumes the role of facilitator or guide. In most PBL discussion, the students resolve a real life case or such a patient case, which just designed by their instructor, whereas problem solving skills are engaged to sort during information being explored, the prominence in tutorial is on the attainment of new information and its effectual combination into students' practiced knowledge support more willingly than on solving the problem in the case (Norman, 1988; Binkley, 1998).

2.4: Characteristics of Problem Based Learning (PBL):

There are several characteristics of problem based learning common in its different approaches (Azer, 2001; Sararinen-Rahiika & Binkley, 1998). These are:

1. Student-centered learning activities in which faculty facilitate dialogue based on a student-generated agenda rather than delivering information with tutorial, clinical laboratory experiences, large group integrated discussion.
2. Small group brainstorming, discussion and debate.
3. Collaborative and self-directed study and evaluation of available evidence.

4. Study of clinical problems, cases or scenarios based on interface with real or hypothetical patients or situations, grounding learning in a clinical circumstance the same as a means of facilitating equally possession and exploration of new knowledge.
5. Use of patient cases to assimilate basic sciences, medical assessment and intervention, interdisciplinary patient management and psychosocial influences that affect patient management.
6. Delineation of individual learner's development and substance objectives, numerous influential and cumulative response of progression towards execution of the objectives.

2.5: Strategies of Problem Based Learning (PBL)

There are lots of variations in how PBL strategies are implemented in health professional education. The four most frequently reported strategies are (Matthews-Smith, Oberski, Gray, Carter & Smith, 2001; Sararinen-Rahiika & Binkley, 1998; Lusardi, Emery & Lake, 1997; Stern & D'Amico, 2001; Lake, 2001; Vernon & Blake, 1993):

1. An absolutely "integrated" PBL approach to an intact curriculum: all didactic and psychomotor learning revolves in the region of the case-based tutorial progression.
2. A modified PBL core curriculum: case based tutorials are used from the first semester of study to incorporate content transversely synchronized basic science, clinical science and professional development course.

3. A conventional PBL program: the program may commence with a combination of habitual delivery and introduction to PBL methods. There is increasing emphasis on small group tutorial, student-centered learning and assimilation of content across courses as students progress through their arrangement of study.
4. A single PBL lessons or unit within a preparation of study, in which one or more courses in a curriculum focus on small group, case-based or context-based discovery of patient care.

2.6: Process of Problem Based Learning (PBL)

2.6.1. PBL in Universiti Sains Malaysia (USM)

Universiti Sains Malaysia is practicing the PBL teaching and learning method in their School of Medical Sciences and the School of Dental Sciences to teach their undergraduate, Doctor of Medicine (MD) and Doctor of Dental Surgery (DDS) programs, which integrated as 5 years programs.

In this five years program, the teaching learning phase includes lecturers, practical, fixed learning modules, clinical clerkships and problem based learning sessions. Each PBL session was conducted with a group of 14-16 students and one lecturer by two to three hours duration. The lecturers to conduct the PBL session were from both basic science and clinical disciplines (Barman, Rogayah & Fuad, 2007).

2.6.2: PBL in Sacred Heart University

There is a substantial difference in PBL strategy realization across health professional curricula and now and then in the different courses within a curriculum. In Sacred Heart University, they introduced a modified PBL program in their entry level physical therapy study, which can be well thought-out as a feasible implementation strategy. In that modified PBL, the discussion will initiate with a synopsis of the logistic or structure of students' learning experience, then will concentrate on faculty development needs specific to PBL and will conclude with a discuss of strategies that are used to assess students' learning. (Lusardi, Levangie &. Fein, 2002).

In each semester, students will be enrolled in a central six credit tutorial class and three credit supportive courses. In tutorial class, several clinical cases will be investigated. The tutorial classes are designed with three components: tutorial sessions, psychomotor lab sessions, and large group discussion sessions. Tutorial sessions are conducted twice per week with six or seven students and a clinician. In each tutorial class, there is a presentation of the specified case by students and followed by an integrated discussion by clinician. The psychomotor lab session is consists of 20 to 25 students facilitated by the semester coordinator and a clinical laboratory instructor twice per week. These lab sessions are to essentially spotlight on students' development on psychomotor skills for assessment and intervention. The large group discussion will be held by all the students and a course coordinator twice per week. The course coordinator will provide a 15 to 20 minutes mini lecture to over come the confusion. (Lusardi, Levangie &. Fein, 2002). The supportive courses are designed to facilitate students' development as they progress by curriculum in three interrelated themes (Lusardi, Levangie &. Fein, 2002).

2.7: Effectiveness of Problem Based Learning (PBL)

The variation of execution of problem based learning (PBL) transversely programs and settings has made it somewhat challenging for long-term effectiveness of the PBL approach, as compared to conventional approaches in health professional education (Ozuah, Curtis & Stein, 2001). PBL method is deliberate to endow with the foundation for life-long learning and evidence-based practice, its worth in the postgraduate clinical environment is biased by two reinforcing factors (Dolmans & Schmidt, 1996; Solomon, Binkley & Stratford, 1996):

1. The variety of comment and degree of reinforcement acknowledged by the Learner in relation to the substance of persistent self-directed, lifelong learning.
2. The extent to which the clinical environment is loyal of skills and learning Methods mastered in PBL such as case reports, professional journal club, use of PBL doctrine and group studies as anticipation of perform scenery.

PBL approach is no less than as efficient as conventional lecture-based program in preparing students in clinical practice (Azer, 2001; Berkson, 1993; Blumberg & Michael, 1992). One of the strengths of a PBL is its consideration to ideology of adult learning and its extremely premeditated included curricular propose. Since PBL emphasizes the learning progression as well as mastery of course content, students enrolled in a PBL curriculum come across a special set of strain as learners. They required to widen their efficient communication skills in teaching and listening, build effective information-seeking, learn to cooperate with each other more willingly than compete and critical appraisal skills, as well as expand valuable self-assessment and

peer-assessment skills (Marshall, Fitzgerald, Busby & Heaton, 1993). In contrast to the students enrolled in conventional entry-level health professional programs, PBL students have a propensity to utilize supplementary textbooks, journal articles and information discussion with faculty and classmates as resources (Albanese & Mitchell, 1993; Schmidt & Molen, 2001). Compared to conventionally prepared peers, the PBL Graduates tend to account superior mastery and more effectual preparation for problem solving, self and peer evaluation, independent leaning, communication and listening skills, information gathering, effectively addressing social and emotional issues of their patients, working collaborate and managing meetings (Blue, Stratton & Donnelly, 1998; Woodward & Ferrier, 1983; Peters, Greenberger-Rosovsky, Crowder, Block & Moore, 2000; Moore, Block, Briggs-Style & Mitchell, 1994). PBL appears to afford students an academically corresponding but more agreeable and more affluent learning experience (Blue, Stratton & Donnelly, 1998; Houlden, Collier, Frid, John & Pross, 2001).

2.8: Challenges of Problem Based Learning (PBL)

Problem Based Learning (PBL) is not devoid of its own problems and issues. Students, who are new to the PBL procedure, they might have passing through frustration and anxiety regarding differences in approach transversely tutorial groups, have difficulty determining the suitable depth and breadth of their groundwork and are anxious about whether they have mastered content enough to pass exams (Sararinen-Rahiika & Binkley, 1998). To be competitive in their high school and college grounding for professional school and to consider it is the instructor's conscientiousness to tell them what they need to know, students are initially uncomfortable on trusting peers to contribute successfully to their learning. The

improvement of effectual communication skills is itself a cumulative process. In the PBL progression, mastery and incorporation of new information into student's acquaintance foundation is influenced, to some extent, by their evolvement communication efficacy (Das, Mpofu, Hassan, M. Y. & Stewart, 2002; Sararinen-Rahiika & Binkley, 1998).

2.9: Criticisms of Problem Based Learning (PBL)

For the newly adopted problem based learning (PBL) students, the process may be disinclined to afford practical criticism to their peers and to sincerely contribute to their own critical self-appraisal with tutors and peers. Many of them are fretful about the foreseeable conflicts or stresses that occur from group progression and be obliged to widen the proper affective and interpersonal skills to cope group process (Moore-West, Harrington & Mennin, 1989).

PBL usually time rigorous procedure for the students and faculty both. Tutorials naturally assemble for two to three hours session per week. The newly enrolled PBL students expend a vast arrangement of time seeking information and preparing for their tutorial presentations.

During that time, they are uncomfortable when information from key possessions is vague and contradictory. Ultimately, on the other hand, students grow to be proficient and efficient in information seeking and assessment and learn to endure the vagueness of no established endpoint to an information search and no single right solution to a question. Students enrolled in a absolutely incorporated or adapted PBL curriculum are naturally much more frustrated and worried about whether they are actually

capable to capture the curriculum, but convey great contentment with tutorial process as the academic program nears completion. Students who are concurrently engaged in a PBL course and numerous conventionally delivered courses express frustration with momentous variation in expectations for their involvement and study strategies transversely courses (Lake, 2001; Sararinen-Rahiika & Binkley, 1998).

2.10: Knowledge as an external factor

Problem based learning (PBL) has currently developed into a widespread teaching method in widen disciplines where individuals obliged to discover to pertain knowledge not only acquire it. PBL derives from the theory that learning is a process in which the learner actively constructs knowledge. Learning results commencing an individual's proceedings, teaching plays a responsibility just to the extent that it enables and fosters constructive activities (Gijselaers, 1996). Three most important theoretical principles sustain the performance of PBL:

1) Knowledge is a constructive process

2) Social and cultural factors affect knowledge

3) Knowing about knowing (metacognition) affects knowledge

2.11: Skills as an external factor

Students and faculty perceptions were different for the tutor skills of guiding students for information management. The students expected more support from tutors, whereas the tutors tried to emphasize self-learning in the PBL curriculum (Das, Mpofu, Hasan & Stewart, 2002).

PBL tutor must possess skills in three areas. First area is relating to the procedure of PBL process i.e. how to establish learning climate, how to plan a tutorial session, how to keep the learning process moving and how to intervene when necessary. Tutors should be able to involve in the discussion and keep the discussion focused on the problem. Secondly, tutors should be able to guide the students with a nondirective open ended question. Thirdly they should have knowledge and skills related to the managing interpersonal dynamics among the group members (Young & Paterson, 2006).

2.12: Theory of Reasoned Action (TRA)

There are diverse theories allied in the progression of predicting the individual's attitude of a specified circumstance. Ajzen's Theory of Reasoned Action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) is one of the broadly exercise theory in social psychology to explicate individuals attitude, which first introduced in 1967. In TRA theory, it states that the individuals performance of a specified circumstance is mainly settle by their intention to adopt that circumstance. According to Ajzen and Fishbein, an individual's intention is determined by three major factors: their attitude toward the circumstance, the influence of the individual's societal environment or subjective norm (beliefs about what others think the individual should do) and their perceived belief control. The attitude component refers to the individual's positive or negative attitude toward engaging in that specified circumstance. The second component, which is subjective norm, is the individual's perception of the social influences or pressures by their favorable people or institution authority respectively to adopt or not to adopt the given circumstance. The perceived belief control refers to the individual's perception to their ability to perform the circumstance. By nature, an individual will

adopt a particular circumstance that they value highly and that are admired by others and will exhort from circumstance that they do not consider auspiciously and that are not favorable by others (Petty & Cacioppo, 1981).

For this current study, this TRA theory provides a framework to study attitudes toward adoption of Problem Based Learning (PBL) facilities. Based on that theory, the superior the intention to adopt the PBL facilities, the superior the probability the individual will ultimately adopt that circumstance. The individual's intention to adopt a circumstance is an amalgamation of attitude of performing the circumstance, their subjective norm and as well as their perceived belief control.

In this study, there are two external variables lecturer's skills and knowledge on PBL are used as the measuring component for the three independent variables the lecturer's attitude, subjective norm and perceived belief control toward the PBL method.

2.13: Attitude

Attitudes are measured personal as they are mostly relying and internally generated on the individual's beliefs concerning a potential outcomes of a specific behavior and the individual's assessment on the behavioral outcomes (Park, 2000). It is an individual's silent beliefs about the consequence of performing the behavior multiplied by the assessment of those consequences. Attitude considered as the first determinant of the adoption. The outcomes of performing an attitude towards a behavior can be either positive or negative (Ajzen, 1985). Attitudes advise individual to reflect on their decisions and the potential outcomes before assembly an assessment.

The individual's knowledge and skills are expected to influence their attitude. The knowledge is based on the lecturers' awareness on the term, definition, characteristics of Problem Based Learning (PBL). On the other hand, the lecturers' skill is based on their ability to build group student learning in different dimensions, ability to conduct loosely structured case, deal with students' doubtful mind set.

According to the expectancy value model, attitude toward a behavior is determined by the total set of accessible behavioral beliefs linking the behavior to various outcomes and other attributes. Specifically, the strength of each belief (b) is weighted by the evaluation (e) of the outcome or attribute, and the products are aggregated, as shown in the following equation: $A \propto \sum b_i e_i$

To evaluate a lecturer's attitude on adopting the PBL method straightforwardly by asking the person to rate the performance of the behavior on a sequence of evaluative semantic different scales for example 5-point Likert scale ("Strongly disagree" – "Strongly agree").

2.14: Subjective norm:

Subjective norm is the second analyst adoption in this study. Similar to first analyst attitude, this second analyst also expected to be influenced by knowledge and skills. Subjective norms assess the influence that other people have on the behavior of the individual (Thompson & Thompson, 1996). If the referents in this study are top management of the university, dean of the school, chair person, counterpart in other university, colleagues, students and very important people of the university sees adopting PBL facilities as positive and the lecturer is aggravated to congregate the